THE NEWSLETTER FOR SCIENCE COMMUNICATION IN INDIA & ABROAD

Capsule

OCT
DEC
1986

3

Young people flocking in the Gallery. It is really a feast for their eyes and minds.

CHILDREN'S SCIENCE GALLERY

a science-bonanza offers VITM

UPON entering the Gallery, one is greeted with an audio-visual presentation, indicating the place of the Earth in the Universe. Natural phenomena like blooming of flowers, growth rings in trees, heart-beat of living beings and tides of ocean, presented in a gripping way, exemplifiy the fact that Nature keeps Time and Rhythm. Here one can clearly understand, through active participation, the concept of measuring Time, in terms of Earth's rotation on its own axis. The paradox of losing or gaining a day across the International Date Line is no more puzzling. Here exciting experimentations drive home into the young minds the causes of different phases of the Moon, Solar & Lunar eclipse, and so on. Great attraction is the special electronic weighing machine that tells one's weight in different planets of the Solar System.

Exhibits, too many to mention, woo the children to a fascinating World of Perception, through fun-packed experimentation. Wide-eyed wonder is their inevitable response to revelations.

NCSM SPEAKS

A steady volume of letters is pouring in everyday at the Capsule Desk. Most are felicitating, with offers of cooperation for the cause of science-propagation, and suggestions full of new ideas.

Mr. Ted Tanen, American Executive Director, Indo-US Sub Commission on Education and Culture, New York, writes—

"I found CAPSULE very interesting and informative. I was pleased to see the articles on "India—a Festival of Science", and the upcoming exhibition, "25 Years of Space Photography". I think the American Members of the Sub Commission's Joint Museum Committee would be interested in seeing a copy of your Newsletter, and would be pleased to see that our efforts are being received so positively in India."

Dr. A. K. Jalaluddin, Joint Director, National Council of Educational Research and Training, New Delhi writes—

"I find the contents and the layout of the Newsletter interesting and feel that every school in the country would like to receive a copy of CAPSULE."

Mr. M. Sivadas, Hony. Executive Director, Jawahar Bal-Bhawan & Childrens' Library, Quilon, Kerala, writes—

"Going through CAPSULE I was impressed by the yeoman service done by NCSM for dissemination of scientific knowledge in the country, with emphasis on rural India. The mobile science exhibition scheme is definitely a great draw in the far-off villages where time stands still, even to this day."

NCSM is happy to see its services in India and abroad, so well received.

Here, in page 3, we give the readers of CAPSULE, an exclusive glimpse of the science centres and other projects of NCSM in the offing, countrywide.

COMPUTER IN SCIENCE MUSEUMS

COMPUTERS. The very word might invoke in the uninitiated, a plethora of jargons—Hardware, Software, Fourth Generation, Cobol, Fortran, Pascal and so on. An esoteric affair. But with a plain little rationalisation, what all these boil down to is that, computer is basically a labour-saving device, like any other tool, and the magnitude of its importance today is similar to that of steam-locomotive in mid-eighteenth century or of aircraft in early twentieth century.

It is only natural that science museums shall be up to utilising this newest dimension of science technology. Industries resort to utilising computers, robots, and in general, all the boons of electronics for fast, streamlined production and better management. What is generally lost sight of is that, mass-production of commodities, too trifle to give a thought to, is possible only by this advanced technology. So it is with science museums. Exhibits that can predict an event through a logical sequence or match several interactive phenomena, are extremely simple to look at and to operate, but the core is a bit complicated microprocessor or IC. Controlling external devices like slide-projectors, colour-sensors etc. with microprocessors, designing exhibits with computers, preparing a wide variety of audio-visual programmes with the aid of electronics—for all these, computer technology is the thing.

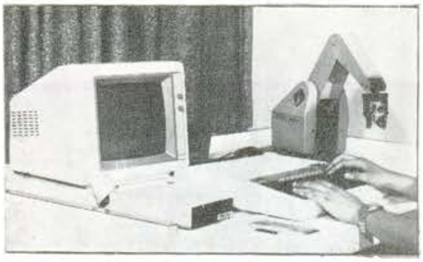
Creating science technology awareness in the people, dispelling all misnomers and undue apprehension about them, is the general objective of a science museum ; and exclusive Computer Corners are there in almost every science centre in India—NCSM Units and in others like Vikram A. Sarabhai Community Science Centre in Ahmedabad—to create computer awareness especially in youngsters. School children are free to play various games on SCL Unicorn, DCM Tandy type personal and micro-computers, and also to learn programming. A scope, which unfortunately is still not available in every school in India.

A science museum reflects the progress of science technology around and the corresponding changes in the people's consciousness. Science centres in the USA have thrown open for the children Robot Corners, where they can handle and play with mini-robots. In NCSM Computer Laboratory, successful interfacing of a micro-robot with a microcomputer is done. Further development is in progress. Laboratories in the NCSM Headquarters are always humming with activities—electronic and hardware testing and maintenance, software development in microcomputers, robotics, video-recording and editing, Dot-Matrix display units for effective communication—multifarious are the programmes. Development of commercial software like payroll, inventory control etc., is also being done on microcomputers. NCSM has plans for introduction in the near future, mainframe computers at a central place with extended terminals in all Units, and use of telephone for information exchange.

Birla Industrial & Technological Museum, Calcutta.

Visvesvaraya Industrial & Technological Museum, Bangalore.

National Science Centre, Delhi.



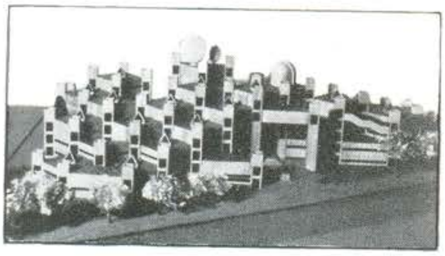
Computer Laboratory, National Council of Science Museums, Calcutta.

Nehru Science Centre, Bombay.

Vikram A Sarabhai Community Science Centre, Ahmedabad.

SCIENCE MUSEUMS IN INDIA

National Science Centre, Delhi



The shape of it—National Science Centre, Delhi.

The massive National Science Centre is coming up fast in Delhi. The main building of the Centre, with an indoor exhibition area of 17000 sq.mt., situated in an attractive setting, will cost Rs. 70 million in the first phase. Apart from depiction of many facets of science and technology through the medium of three-dimensional interactive exhibits, an important section of the Centre will focus on ancient India's excellence in science technology-based arts and crafts, and on the continuum of the traditions over four millenia.

Work is in rapid progress for the Children's Science Park in the northern extreme of Delhi, near Delhi University. A sprawling area of 15 acres will house captivating outdoor exhibits, aviary, children's pet area, warerbody exhibits and all regular features of a Science Park. The Centre, with its Galleries and the Science Park, has the promise of being a major attraction of the Capital.

On completion, the Centre will undertake the charge of bringing the whole of northern India under its mobile science exhibition and satellite science centre network.

"Energy is Life" Pavilion.

"Energy is Life", a permanent exposition on Energy at Pragati Maidan, Hall No. 7, New Delhi, is a major attraction of the city. This totally renovated Hall had entertained almost a million visitors last year.

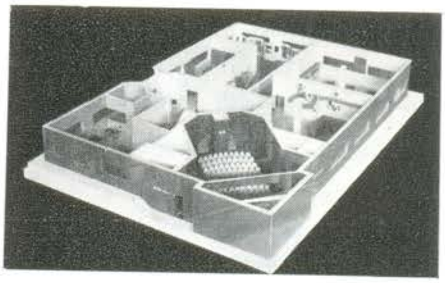
Exhibit in action at "Energy is Life" exposition.

Central Research & Training Laboratory, Calcutta

Layout model of the CRTL.

Central Research & Training Laboratory is coming up in a big way at Salt Lake City, Calcutta. Construction work for this impressive 10 storied building with 45,000 sq.ft. floor area in the first phase with a provision for substantial expansion on a land of 2.5 acres involving an expenditure of rupees 20 million, started in 1986 and is scheduled to be completed within just a year and a half. It will provide facilities for research and prototype exhibit development, evolution of new museum techniques and training of science museum personnel coming from all over India and abroad.

Regional and District Science Centres

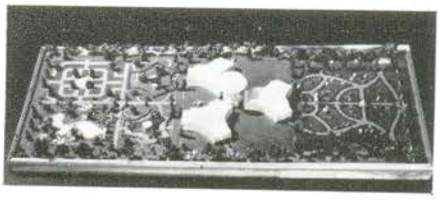


Layout of the basement, Regional Science Centre, Bhubaneswar.

Layout model of Regional Science Centre, Lucknow.

A country of wide range and diversity that India is, calls for rapid proliferation, intensification of activities, a total reach-out, on the part of the Institutions serving the Nation. NCSM feels so.

Three Regional Science Centres are coming up at Bhubaneswar, Guwahati and Lucknow. One at Bhopal is under planning, to be completed within the 7th Plan Period. Blueprint is also being ready, for establishing within the same span of time, District Science Centres at Calicut in Kerala, Panaji in Goa and Darjeeling in West Bengal.



Layout model of Raman Science Centre, Nagpur.

It is the NCSM's modest way of paying tribute to the memory of Sir C. V. Raman, the great son of India, the first Nobel Laureate in science of Asia. Work for Raman Science Centre at Nagpur is under progress, scheduled to be commissioned by 1988, his first birth centenary.

Indian National Committee for the ICOM Programme :

Workshop on "Interaction of Science and Art in Creative Process—a Case Study With Textiles"

Varanasi, November-December, 1986.

Seminar on "Outreach Museum Activities—Involvement of Supporting Institutions".

Bombay, August, 1986 & Madras, September, 1986.

Fifth Science Sammelan (Meet)—1986.

District Science Centre, Tirunelveli & All India Radio, Madras.
Tirunelveli, September 08-13, 1986.

Symposium on Science Park Programme.
UNESCO, New Delhi, October, 1986.

"Museums and the Future of Our Heritage—Emergency Call".

The 14th General Conference of ICOM (International Council of Museums).

Buenos Aires, October 26-November 04, 1986.

National Science Seminar—1986

The stage is all set at FICCI auditorium, New Delhi, for the event. Eager expectant participants from all-over India, traversing the successive stages of Block, District and State levels, will deliberate there on October 01, 1986 on the topic, "Green Revolution and our Future".

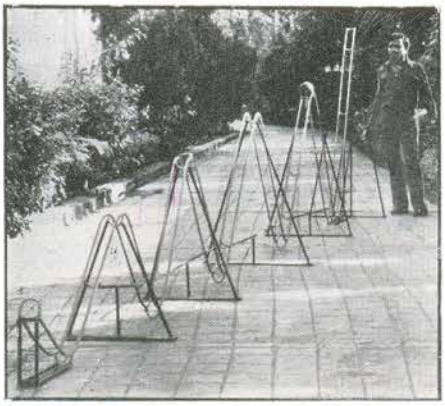
Fellowships of Rs. 200/- and Rs. 100/- per month, tenable for one year, for higher studies, is the NCSM way of enthusing the budding thinkers.

Fifth All India Workshop on Role of State Councils in Utilising Remote Sensing Technology for Resources Survey and Management.

Department of Science & Technology, Govt. of India and Assam State Council for Science & Technology. Guwahati, November 14—15, 1986.

Roller Coster

Roll the wooden ball from different points of the first slope (right). Scmetimes it jumps out of the track ; sometimes it just fails to ascend the first crest. But let go the ball from a particular point of the first slope, and see how nicely and gracefully it tides over the first and all the subsequent crests, before coming to a stop.



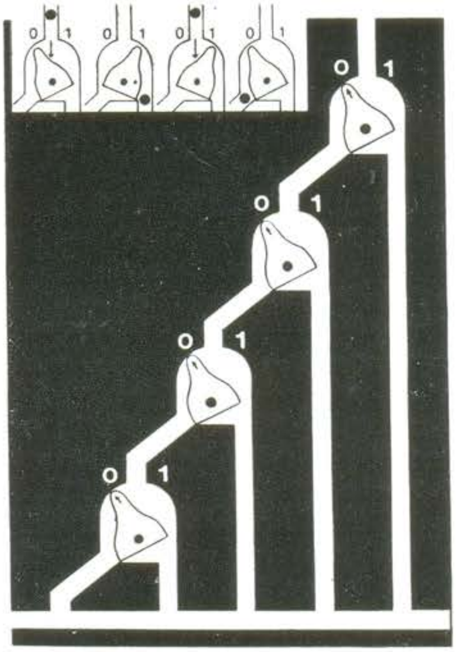
Loop the Loop

A different way of playing a similar game. Here it is a spiral track. The ball, unless set from a particular point of the incline, fails to roll up on all the loops.

The games are great fun. And picking up the scientific principle behind the surface level of action—interplay of potential and kinetic energy, boosts the fun.

Who is Afraid of Computers ?

All decimal numbers can be expressed using digits 0-9 only. The binary system on which computers work, represents all numbers using digits 0 & 1 only.



This device will give you direct conversion of certain decimal numbers (1 to 15) into binary numbers. Nehru Science Centre, Bombay has developed it.

Set all the pivoted pointers to 0 position. Drop the first ball (representing 1) from top and note the positions of the pointers, from left to right. They will read 0001, which is the binary form of decimal number 1. Similarly, the second ball will set the pointers at 0010 which represents decimal number 2. The 16th ball will set the pointers at 0000. Now the game can start once again.

Here is also given a conversion table.

Decimal	Binary	Decimal	Binary
0	0000	8	1000
1	0001	9	1001
2	0010	10	1010
3	0011	11	1011
4	0100	12	1100
5	0101	13	1101
6	0110	14	1110
7	0111	15	1111

India a Festival of Science

"THIS sojourner minstrel of India is in your land for the last thirteen months, preaching from place to place across the country the message of India—India that was, India that truly is ; and I believe by now it is somewhat familiar to your countrymen. I feel, any sort of introduction will be redundant, as the exhibit is a unique, India in microcosm, and speaking for itself".

Dr. Saroj Ghose, Director General, National Council of Science Museums explaining the Steller Zodiac exhibit to the Hon'ble Minister, Shri P. V. Narasimha Rao. At the left of the Minister is Dr. S. Varadarajan, Chief Consultant, Planning Commission and Chairman, Governing Body, NCSM.

(Top) Demonstration of gemstone cutting. (Bottom) People always find the galleries enthralling.

Thus spoke the Hon'ble Shri P. V. Narasimha Rao, Union Minister for Human Resource Development, while inaugurating "India—A Festival of Science" at Pacific Science Centre, Seattle in USA, on July 01, 1986, before an assemblage of 2000 people.

Why this exhibition ? What profile of India does it show and what validity does it have to the American people ?

"Since one out of every seven of the world's peoples is Indian, India is a country that Americans need to know more about. India's history of science & technology, especially, is one of the country's least known, yet most important, stories"—says Dr. George Moynihan, Executive Director of the host Museum.

So, after a brief insight into the rich treasure of Indian heritage, and its bearing on India's present development, the Minister probed into a question of deeper magnitude. Negating the misnomer that India is a land of spiritualism, theology and philosophy, devoid of science, he asserted that Indian tradition is of monism, as opposed to dualism. In his own words, "differentiation between the philosophic and the scientific realms has no place in Indian tradition. These two are rather complementary and supplementary aspects of life. This beatific vision, that sees Life in perpetual flux, in the backdrop of Time Eternal and Space Infinite, and yet does not miss the singular strain of Continuity, stems out of our search for Excellence and Quality".

The Minister rounded his discourse with a quotation from Rigveda, the epitome of classical Indian wisdom—"Aa No Bhadra Kratavo Yantu Vishvataha", meaning "let noble thoughts come to us from every side" ; and then said, "we believe in this view, and invite our American friends to share."

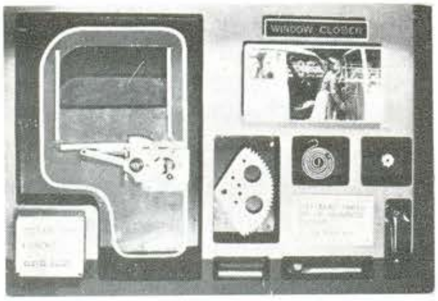
The exhibition is receiving over 2000 visitors a day in Seattle. It will remain there till Nov. 02, 1986.

"How Things Work" Gallery at BITM Opens

Things work. That is what they are for. The sewing machine drones on, stitching. The zip fastens, with a swish. Easily, almost effortlessly. Security, at the flick of a key, when a big multi-lever lock closes. Turn the knob, reclined in your cosy auto, and the windows close.

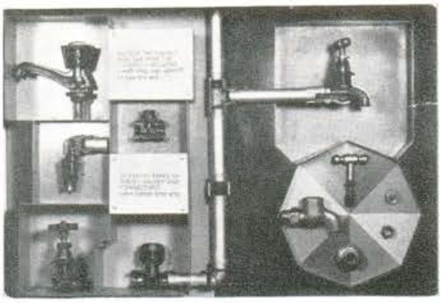
But a baffle wall springs up, when something goes wrong. The kitchen faucet drips on, despite turning the knob off. Your gumption also leaks along ; leaving you bogged down. At the extreme, you inadvertently side with the antitechnology camp. For which anything, but the technology, is responsible.

Smt. Krishna Sahi, Union Minister of State for Education & Culture, inaugurated the Gallery on September 20, 1986.



Mechanism of Car Window Closer.

"Things work" only is not enough. We must know, "How". Not just driven by necessity, but with a healthy inquisitiveness, with tenderness and love, as if the "things", the specific technologies behind them, are living entities.



How a household faucet works

Misnomers about modern gadgets vanish into the blue in this new Gallery of Birla Industrial & Technological Museum, Calcutta.

Centre for Cultural Resources and Training, New Delhi

Preserving the cultural heritage of India.

The aim of CCRT is to foster art and culture and the Centre is working to integrate art and culture in India's modern system of education. To achieve this, CCRT is organising orientation and refresher courses for the benefit of primary, high and higher secondary school in-service teachers throughout the year. It is also making efforts to make puppetry a forceful and viable educational medium for teaching the complex subjects like science, mathematics etc. in schools.

Birla Museum, Pilani

In 1954, came up, Birla Museum in Pilani—a University town near Delhi. And that event ushered in science museum movement in India ; today about a score of such museums dot the country's map.

Entrance of the Museum.

A Science museum grows not with its collection of artefacts but with infusing the spirit of science technology into people's consciousness. So Birla Museum replaced the plan of acquiring exhibits from abroad with organising specialised studies and workshops that produce sophisticated models using most modern materials.

Keeping in tune with the new generation museums of the developed world, Birla Museum is a place of attraction for people at large and young students in particular, providing a wealth of knowledge in an enjoyable manner. It is a centre of education, pulsating with activity and translating complex ideas into visual forms through the medium of three-dimensional exhibits. It has an elegant new building with about 50,000 sq.ft. built-up area in a very attractive setting.

Indo-US Sub Commission Programmes

The 12th meeting of the Joint Museums Committee under Indo-US Sub Commission on Education and Culture was held in New Delhi on March 25-26, '86. Many valuable ideas were generated and elaborate programmes chalked out on the wide spectra of topics relating to museology and museums, especially science museums.

The Sub-Commission noted with satisfaction that the Workshop held in January 1986 in the USA on 'The Planet Earth' had drawn up a detailed list of exhibits, to be developed both in India and the USA. It was agreed that the next Workshop will be held in India in 1986 on 'Creative Endeavours with Exhibits and Programs', covering a broader area involving artistes-in-residence, explainer-based exhibits, demonstration lectures, loan exhibits and discovery room kits.

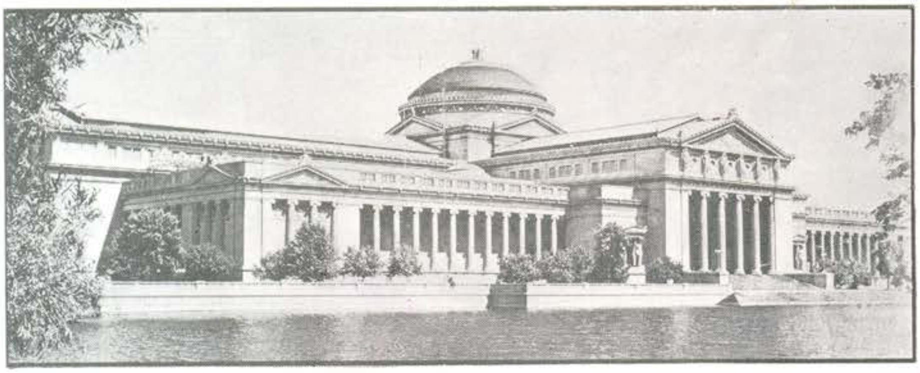
The Sub Commission noted that a Workshop on 'New Approaches to Planetarium Education' would be held in India in 1986 with two American experts and an appropriate number of Indian professionals.

The Joint Museum Committee had approved a programme of activities to be taken up in 1987 and 1988 on the growing use of computers in science museums, and utilising the technology both for exhibits and programmes. In the first phase, a Workshop will be held involving exhibit designers, museum educators and software developers, to work out specific requirements. In the second phase, computer experts of both the countries will sit together for development of necessary software that could be tried in science museums of both the countries.

The Exhibition, "25 years of Space photography" coming to India under the Indo-US Sub-Commission programme will be inaugurated in Calcutta on November 29, '86 and is scheduled to visit Calcutta, Tirunelveli, Bangalore, Bombay, Delhi, Purulia and end up the journey in Bhubaneswar on October 31, 1987.

Museum of Science & Industry—Chicago

It is very difficult to encompass such a museum in so small a space. The museum, visiting of which at a single go may take more than one full day, falls in line with the great ones of the world like Deutsches Museum in FRG, Science Museum in London, Smithsonian Institution in the USA, Park De La Villette in France etc, in its vastness, number of galleries, subjects and activities. A full-fledged coal mine with sophisticated machineries, the Nobel Hall of Science, Galleries on Energy, Health & Medicine, Industry, Automobile, Agriculture, Water, Aviation, Space Exploration, Doll collection, Money & Banking, Telecommunication, Newspaper, Chicago Architecture, Sea-power and so on; real trains, ships and submarines and The Fairy Castle.. the great assemblage in Chicago Museum definitely has something to offer to people of any age.



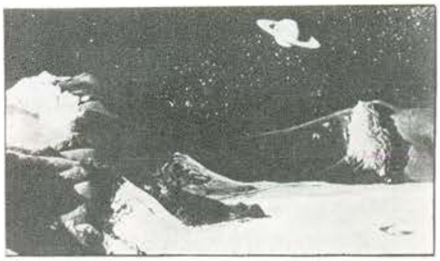
Hall of Science, New York

After 5 years and $9 million of work the Hall of Science reopened on July 30, 1986. It is hoped that this will become a world-class Centre for public display of science technology and will be considered in the same league as such leading science and technology exhibition sites as the Ontario Science Centre or Franklin Institute in Philadelphia.

Plans call for the exhibits to cover such topics as robots, cosmic rays, light & vision, lasers & physics, electronic communication and astronomy. "Most of the exhibits will be designed and built at Hall, and it is more fun to do our own," said Dr. Alan J. Friedman, Director of the Centre.

CAPSULE-1 told about ASTC (Association of Science Technology Centers, USA) Travelling Exhibition Service. To keep abreast of people's expectations ASTC goes on adding new units to their existing fleet. Here is a couple of them—

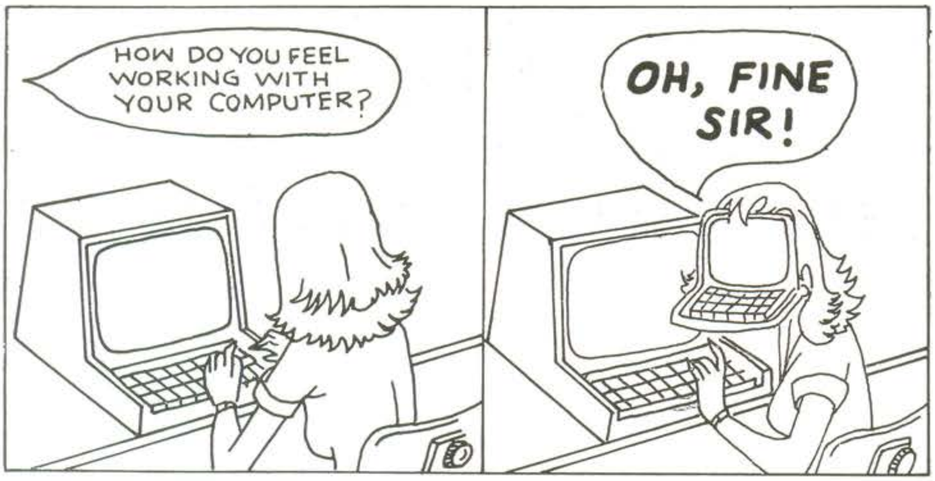
"MicroScapes" is a selection of 50 photographs that explore the aesthetic side of microelectronics and fibre-optics and the materials and processes involved in their production.



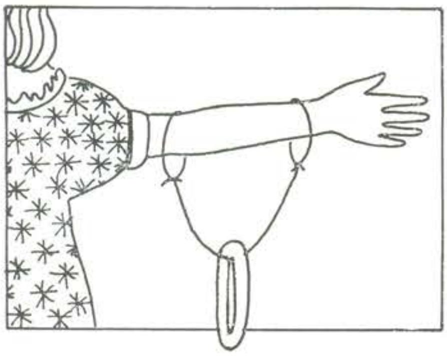
"Other World" is an exhibition by "astronomical artists", as Arthur C Clarke puts it, who "will always be far ahead of the explorer. He can depict scenes which no human eye will ever witness, because of their remoteness in Time and Space".

IN LIGHTER VEIN...

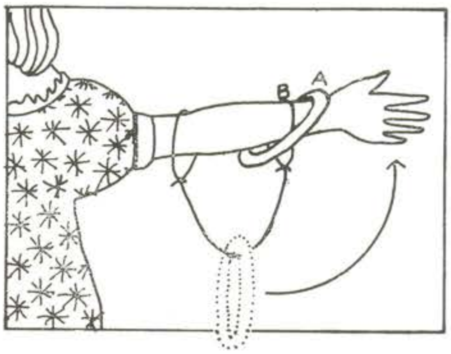
MADE FOR EACH OTHER


HOW DO YOU FEEL WORKING WITH YOUR COMPUTER?
OH, FINE SIR!

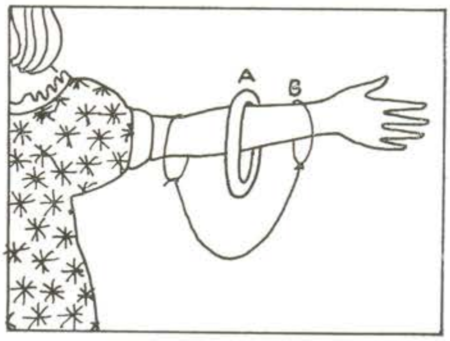
TOPOLOGICAL ROPE PUZZLE



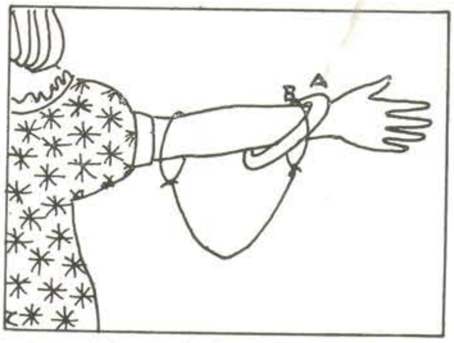
Put one set of handcuff over one arm with a ring on the rope as pictured :



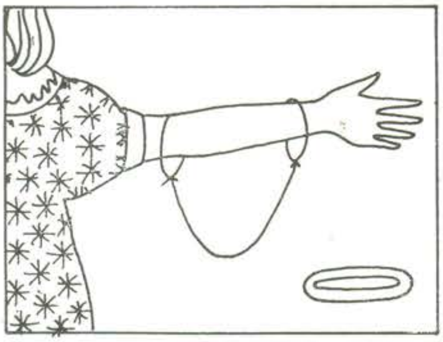
Put loop A from its original position over one hand :



Slide the handcuff loop through loop A :



Insert loop A through loop B, and out it comes !



Separate the ring from the rope and the arm.

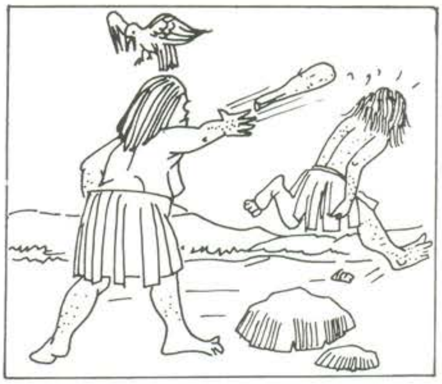
Remember Holmes The Numismatist, in CAPSULE 2 ? How did he detect that the coin was fake ?

The counterfeiter's craftsmanship is perfect, except the silly mistake of putting the word 'BC'.

THE NEXT...

NATIONAL Science Centre, Delhi adds to the Hall of Energy at Pragati Maidan, a fascinating new exhibit, ENERGY BALL. Covering an area over 4,000 sq.ft, this exhibit exemplifies through multiple operations of rolling balls, conversion of potential energy to kinetic, in different manifestations. CAPSULE 4 will give you the details.

INVENTION OF GUIDED MISSILE



WE NEED....

EDITOR CAPSULE is looking forward to your sending by October 31, 1986, publication materials for the fourth issue of CAPSULE. Please send short notes, photographs, problems, suggestions, cartoons anc puzzles.

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